REMARKS

Claims 1-6, 8-20, 23-66 are presented for further examination. Claims 7, 21, and 22 have been cancelled. Claims 1, 8, 9, 17, 23, 31, and 45-47 have been amended. Claims 48-66 are new.

In the Office Action mailed March 9, 2005, the Examiner requested a copy of the previously-submitted Oath/Declaration. Applicants are submitting herewith a copy of the previously-submitted Declaration as requested by the Examiner.

Claims 1-6, 17-20, 45, and 46 were rejected under 35 U.S.C. § 102(b) as anticipated by the Digital Audio Compression Standard (AC-3) published by Advanced Television Systems Committee ("ATSC"). Claims 7-11, 21-25, 31-35, and 47 were rejected under 35 U.S.C. § 103(a) as unpatentable over ATSC in view of U.S. Patent No. 5,003,490 ("Castelaz et al."). Claims 12-16, 26-30, and 36-44 were found to be allowable if rewritten in independent form.

Applicants respectfully disagree with the bases for the rejections and request reconsideration and further examination of the claims.

As described in the detailed description portion of the application, one embodiment the present invention utilizes neural network processing for selecting a coding strategy in an audio data encoder. As shown in Figures 3 and 4, the neural network processing efficiently uses two layers for weighting inputs and determining an output. In accordance with one aspect of the invention, the neural network processing determines a first variation of exponent values between a first exponent set in the sequence and each subsequent exponent set in the sequence to determine the maximum number of exponent sets that are similar to a given set. An exponent coding strategy is then selected for the first exponent set from a plurality exponent coding strategies on the basis of the first variation, and then the first exponent set is coded according to the selected exponent coding strategies. Castelaz et al., U.S. Patent No. 5,003,490, describe a conventional neural network signal processor (20) that receives unprocessed input signals from a sensor and responds with a desired output when the input contains some form of a training waveform previously introduced to the system. To accomplish this, Castelaz et al. utilize a three-layer neural network processor (20) to process a number of

variables of the input signal, such as signal width, amplitude, and the width of each sampled step, for example. The description of using a three-layer neural network signal processor (20) is set forth at column 9, lines 5-13 and illustrated in Figures 4 and 5. Because of the operational requirements and circuit architecture relied upon by Castelaz et al., a two-layer neural network signal processor would not function to accomplish the objectives of Castelaz et al.

The ATSC reference cited by the Examiner provides a superficial description of a digital audio compression standard, including suggestions on encoding exponents. As the Examiner acknowledges, nowhere does the ATSC reference teach or suggest the use of neural network processing for encoding data signals.

Turning to claim 1, a method for processing data in an audio data encoder is provided that includes determining a first variation of exponent values within a first exponent set, determining a second variation of exponent values between the first exponent set and each subsequent exponent set in the sequence using two-layer neural network processing. As discussed above, nowhere do Castelaz et al., taken alone or in any combination with ATSC, teach or suggest the use of two-layer neural network processing for encoding audio data. Moreover, the ATSC reference does not teach or suggest using neural network processing much less how such processing could be configured to accomplish audio data encoding. The Castelaz et al. reference does not provide the necessary teaching to one of ordinary skill on how to adapt the neural network signal processor of Castelaz et al. so that it will function within the AC-3 Digital Audio Compression Standard of the ATSC reference. Even if one were motivated to attempt such a combination, it would fall short of the invention as recited in claim 1 because it would attempt to use a three-layer neural network processor instead of a two-layer neural network processor. In view of the foregoing, applicants respectfully submit that claim 1 is clearly allowable over the references cited and applied by the Examiner.

Dependent claims 2-6 and 8-16 are also allowable for the reasons why claim 1 is allowable as well as for the additional features recited therein. For example, claim 2 recites the exponent coding strategy being assigned from a plurality of exponent coding strategies having different differential coding limits. Nowhere does the ATSC reference describe or suggest using different differential coding limits. Dependent claim 8 recites the neural network processing

including first and second neural layers, the first neural layer computing weighted sums of its inputs and a second neural layer determining a coding strategy for a selected output from the first neural layer. Nowhere do Castelaz et al. or ATSC, taken alone or in any combination thereof, teach or suggest these features.

Independent claim 17 is directed to a method for coding audio data having a sequence of exponent sets comprising a plurality of exponents, the method including determining via neural network processing a first variation of exponent values between a first exponent set in the sequence and each subsequent exponent set in the sequence to determine the maximum number of exponent sets that are similar to a given set, selecting via the neural network processing an exponent coding strategy for the first exponent set from a plurality of exponent coding strategies on the basis of the first variation, and coding the first exponent set according to the selected exponent coding strategy.

As discussed above, nowhere do Castelaz et al. teach or suggest a neural network processing that is configured to determine the maximum number of exponent sets that are similar to a given set in a method for coding audio data. Moreover, the device of Castelaz et al. is configured to respond to an input with a desired output based on previous training waveforms submitted thereto. In the claimed invention, the neural network processing is used to determine a first variation of exponent values between a first exponent set in the sequence and each subsequent exponent set in the sequence to determine the maximum number of exponent sets that are similar to a given set. Nowhere do Castelaz et al. or ATSC, taken alone or in any combination thereof, teach or suggest such steps. In view of the foregoing, applicants respectfully submit that claim 17 and dependent claims 18-20 and 23-29 are clearly allowable.

Independent claim 31 is directed to a digital audio encoder in which audio data is transformed into coefficients having mantissas and exponents arranged in a sequence of sets, the encoder having, *inter alia*, a first variation processor coupled to receive the exponents of sets from the sequence and to determine a first variation of exponent values between a first set and a plurality of subsequent sets in the sequence, a second variation processor coupled to receive the exponents in the first set and determine a second variation between consecutive exponent values within the first set, and a two-layer neural network processor coupled to receive the first and

second variations and to select and assign an exponent coding strategy to the first set from a plurality of coding strategies on the basis of the first and second variations and a mean average difference calculation between consecutive exponents.

Castelaz et al. do not teach or suggest a two-layer neural network processor much less a processor that receives first and second variations and selects and assigns an exponent coding strategy to the first set from a plurality of coding strategies on the basis of the first and second variations and a mean average difference calculation between consecutive exponent values. Thus, any combination of Castelaz et al. with ATSC clearly falls short of the combination recited in claim 31. Applicants respectfully submit that claim 31 is clearly allowable. Dependent claims 32-43 are also allowable for the reasons why claim 31 is allowable and for the additional features recited therein.

Independent claim 45 is directed to a method for processing data in an audio data encoder that includes, *inter alia*, determining via a two-layer neural network processing a first variation of exponent values within a first exponent set, determining via the two-layer neural network processing a second variation of exponent values between the first exponent set and each subsequent exponent set in the sequence, and assigning via the two-layer neural network processing an exponent coding strategy to the first exponent set based on the determined first and second variations, wherein the exponent coding strategy is assigned from a plurality of exponent coding strategies having different differential coding limits using a mean average difference calculation between consecutive exponent values. Applicants respectfully submit that claim 45 and dependent claims 46-47 are allowable for the reasons discussed above with respect to independent claim 31, *i.e.*, nowhere do Castelaz et al. and ATSC, taken alone or any combination thereof, teach the use of two-layer neural network processing to select exponent coding strategies using a mean average difference calculation between consecutive exponent values.

New claims 48-66 are allowable and accompanied by allowable dependent claims 13-16, 27-30, and 38-44 renumbered accordingly. Applicants respectfully submit that all of these claims are in condition for allowance.

In view of the foregoing, applicants respectfully submit that all claims in this application are now condition for allowance. In the event the Examiner finds minor informalities

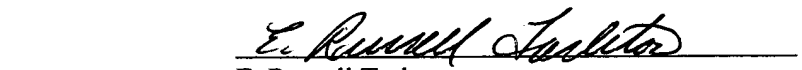
that can be resolved by telephone conference, the Examiner is urged to contact applicants' undersigned representative by telephone at (206) 622-4900 in order to expeditiously resolve prosecution of this application. Consequently, early and favorable action allowing these claims and passing this case to issuance is respectfully solicited.

The Director is authorized to charge any additional fees due by way of this Amendment, or credit any overpayment, to our Deposit Account No. 19-1090.

All of the claims remaining in the application are now clearly allowable. Favorable consideration and a Notice of Allowance are earnestly solicited.

Respectfully submitted,

SEED Intellectual Property Law Group PLLC



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DECLARATION AND POWER OF ATTORNEY

As the below-named inventors, we declare that:

Our residences, post office addresses, and citizenships are as stated below under our names.

We believe we are the original, first, and joint inventors of the invention entitled "A Neural Network Based Method for Exponent Coding in a Transform Coder for High Quality Audio," which is described and claimed in the specification and claims of International Patent Application No. PCT/SG98/00009, which was filed on 12 February 1998 and for which a patent is sought.

We have reviewed and understand the contents of the foregoing specification, including the claims, as amended by any amendment specifically referred to herein (if any).

We acknowledge our duty to disclose information of which we are aware which is material to the patentability and examination of this application in accordance with 37 C.F.R. § 1.56(a).

We hereby claim foreign priority benefits under 35 U.S.C. § 119 of the foreign patent application listed below:

PRIOR FOREIGN/PCT APPLICATION(S) AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. 119:			
COUNTRY	APPLICATION NUMBER	DATE OF FILING	PRIORITY CLAIMED UNDER 35 USC 119
PCT	PCT/SG98/00009	12 February 1998	YES

I hereby appoint DAVID V. CARLSON, Registration No. 31,153; MICHAEL J. DONOHUE, Reg. No. 35,859; KEVIN S. COSTANZA, Registration No. 37,801; SUSAN D. BETCHER, Reg. No. 43,498; BRIAN L. JOHNSON, Registration No. 40,033; E. RUSSELL TARLETON, Registration No. 31,800; ROBERT IANNUCCI, Reg. No. 33,514; and BRIAN G. BODINE, Reg. No. 40,520; comprising the firm of Seed Intellectual Property Law Group PLLC, 701 Fifth Avenue, Suite 6300, Seattle, Washington 98104-7092; and LISA K. JORGENSON, Registration No. 34,845; Registration No. 33,114; ROBERT D. McCUTCHEON, Registration No. 38,717; JEFFREY D. MOY, Registration No. 39,307, and THEODORE E. GALANTHAY, Registration No. 24,122, as my attorneys to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. Please direct all telephone calls to David V. Carlson at (206) 622-4900 and telecopies to (206) 682-6031.

We further declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that the making of willfully false statements and the like is punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and may jeopardize the validity of any patent issuing from this patent application.

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